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Thus we have found a rare form of crinoid, which has been described in the American Journal of Science, vol. XII, p. 81, by G. B. Grennell, as Uintacrinus socialis. This was also found in Utah by Prof. Marsh's party. It is the more worthy of note, as until quite recently, neither in Europe nor America had crinoids been discovered in the Cretaceous. We have learned, too, of the pterodactyls of America, that all thus far discovered are without teeth: a fact in strong contrast with those in other parts of the world. The jaws or beaks of the American species are longer and more slender than those hitherto known, and in the opinion of Prof. Marsh, showing indications of having been encased in a horny sheath. These features were made known in an article in the American Journal of Science, vol. XI, p. 507. We also procured more perfect specimens of the smaller bones of the order from the hands and feet. A few solitary bones have been placed in this cabinet. Our collections of saurians have also given us more correct knowledge of their structure. The same may be said of turtles. Fossil fish, also, are quite numerous in the territory under examination. One fact of interest in this family was the finding of the teeth, cartilaginous jaw and vertebræ of a shark, Galeocerdo falcatus, three portions of which, I think, have never hitherto been found together. The flat porous vertebræ had occasionally been collected, but the genus to which they belonged was unknown. Several were found some years ago and placed in our cabinet, but not classified. The teeth have long been known and described.

Fossil birds were rare and valuable findings. These were generally of the order Odontonadæ, or birds with teeth. They were of two genera; in one, the teeth being placed in sockets, like mammalia, and in the other, in grooves, like many genera of fish and reptiles. Several new species were added to science, and more perfect specimens of Hesperornis were collected the past summer than ever before. Perhaps it may not be amiss to add that birds with teeth have been found only in the United States, and one genus, the Icthyornis, only in Kansas. Thus, our fossil pterodactyls have no teeth, and our birds have, in direct contrast with those found in other parts of the world.

We confess, in closing, that the great pleasure of our employment in thus unfolding the geological wealth of Kansas, is mingled with regret that these valuable specimens, amounting to some six or eight tons, have gone out of the State to enrich an institution already possessing one of the best collections in the world, while our own cabinets, private and institutional, are yet meager in these vertebrate remains, and perfect specimens of which no future explorer can hope to procure by going over the same grounds.

CLIMATE AND BRAINS.

By M. V. B. Knox.

"The general aspects of nature, the climate, and the scenery," says B. F. Cocker, "exert an appreciable and acknowledged influence on the mental characteristics of a people." Mitchell says: "A hot climate and a bounteous soil, where but little labor is needed to procure the necessaries of life, tend to enervate the body and mind; but a temperate clime, where the hand and head must be constantly at work, is favorable at once to physical, intellectual and moral development." "With the tropical man," says Guyot, "the life of the body overmasters that of the soul; the physical instincts of our natures those of the higher faculties; passion, sentiment, imagination predominate over intellect and reason; the physical faculties over the active faculties. In the temperate climates, all is activity, movement. Here physical nature is not a tyrant, but a useful helper; the active faculties, the understanding and reason, rule over the instincts and the passive faculties; the soul over the body. In the frozen regions, man contends with a niggardly and severe nature. It is a desperate struggle for life. No higher culture is possible under such unfavorable conditions.''

The student of history can at once see the truth of these statements. No nation great in moral and intellectual development exists or ever has existed in a purely tropical or frigid climate.

The discussion in this paper will seek the relation between climate and brain-power and products, and this ultimately with reference to Kansas.

Herschell defines the climate of a country as the result of all the meteorological influences to which it is habitually subjected. ''Climate,'' says Humboldt, ''indicates all the changes of the atmosphere which sensibly affect our organs, as temperature, humidity, variations in barometrical pressure, the calm state of the air, or the action of opposite winds; the amount of electrical tension, the purity of the atmosphere, or its admixture with more or less noxious, gaseous exhalations; and finally, the degree of ordinary transparency and clearness of the sky, which is not only important with respect to the increased radiation from the earth, the organic development of plants, and the ripening fruits, but also with reference to its influence on the feelings and mental conditions of man.''

Brain-power may mean that activity of the mind which shows itself in various great productions, as literature, art, architecture, conquest, or civilization. Any one of these marks great intellectual power, though some more than others. A statue, a temple, or a campaign, may, in its conception and finish, be a poem; but above Phidias, Cheops and Alexander, tower Homer, Shakespeare and Milton. Products of pure mind justly rank above those in which the conception is carried out only by vast physical aid. The writings left by the Greeks are worth more to us than their sculpture and temples. It is interesting to trace the gradual change in brain-products from very ancient times to later, and see that they not only change from the gross to the finer, but the locality of them is from warmer climates to colder. This will be seen by glancing at some of the most noticeable instances.

Egypt, with its very ancient civilization, in a mean temperature of about 72° Fah., principally gave expression to its brain-activity in gigantic pyramids, huge sculpture, massive temples, Sesostris-like conquests, and the elements only of the arts and sciences. The climate seems to have been too warm for great mental activity and acumen, though the extremely dry atmosphere gave the ancient Egyptians advantages in this respect superior to many of their neighbors. When they no longer had princes able to lead to conquest, or to build vast pyramids, the ease with which they could procure a living from their rich valley allowed them to fall into habits of indolence and into enervation.

India, in similar temperature, but with damper air, later produced the fantastic civilization of the Ganges and Punjaub; the light architecture, imaginative and sensual in its nature; the weird Vedas, with their glimpses of the true God, but impossible systems of cosmogony, deities, and worship. Regarded simply as a brain-product, the Vedas are greatly superior to the Egyptian Book of the Dead. But the variations of climate in India are greater than in Egypt, if we take the extended definition of climate given by Humboldt. It will be noticed that reference is made to the influence of climate, only, on the intellectual powers, it not being the design to involve the peculiarities arising from race, the extraneous influences of national relations, or the manifest destiny of nations. God is in history, but not to the total exclusion of many surrounding influences.

Passing from these hot latitudes, let us glance at the climate and intellectual force of the Greeks. Instead of a temperature ranging from 72° to 75° Fah., it averages ten degrees less; a country not of broad plains and great rivers, but one of narrow vales, short, rapid streams, indented seacoasts, beetling cliffs and snow-capped mountains. Here were clear skies, equable temperature, variety of products, a soil not so rich as to breed habits of indolence, alternating sea breezes and bracing mountain air, all combining with nobleness of race and high destiny, to place the Greek people where it could achieve prodigies of brain-product. How nobly it did this is shown by advanced civilization, arts, laws; its unrivaled architecture and statuary; its grand literature of poems, history and philosophy. But an imaginative, sensual element enters into every Greek production.

In Italy the climate is even nearer perfection. ''Varro preferred the climate of Italy to that of Greece, as producing in perfection everything good for the use of man.'' If it lacks the grand, rugged mountain scenery of Switzerland, it has enough mountains to give great variety, with wildly romantic valleys between them. On all sides the sea reflects the sun's bright rays; now sea breezes, now mountain zephyrs dally with the luxuriant foliage of the oak, chestnut, mulberry and vine. Here brain-products were on a vaster scale, with more patience in working them out, broader culture, especially in law and general knowledge. But when in the Roman Senate there was no longer the cry of Cato that Carthage must be destroyed, when wealth and luxury and possibility of ease did their deadly work on the Roman character, the climate, too warm and humid to drive or invite to hard mental labor, allowed the scepter to depart from Italy, and now it is upheld by a sturdier race in a colder climate.

France may next claim attention. Here the climate is a little colder than in Italy, ranging from 60° in the south to 50° in the north. Zones of olive, maize, vine, small grains, succeed each other. The climate is modified by proximity to the sea and to mountain ranges. From the various climatic influences, genial and sunny, there could be expected a literature sparkling and vivacious, and such the French have produced. In other things beside literature, similar results have arisen from brain-power. The names of Rousseau, Voltaire, Racine, Moliere, De Stael, Lamartine, suggest graceful, racy, but not profound productions. Doubtless France has passed the zenith of her glory in brain-products.

To find the peoples who are most prolific in brain-work, it is necessary to go to colder and more northern climates. Justly, Great Britain and Germany can lay claim to preeminence. England, near the center of the temperate zone, is, by its insular position, never subjected to extreme climatic changes, and grows food eminently fitted to produce a robust physique—not food so much to pamper the appetite as to satisfy the demands of a rigorous climate. The names of such men as Spenser, Milton, Shakespeare and Gibbon will ever be abundant proof of England's intellectual grandeur. In one corner of Great Britain lies plucky little Scotland, ''where to a late period a scanty population rescued itself from want or barbarism by determined and intelligent industry.'' Scotland has given to the world James Watts, Burns, Hume, Scott, Macaulay, Livingstone and Carlyle. It is generally recognized, even by Englishmen, that she produces a superior race of men; and to what is this fact due more than to her cold bracing mountain air and severe climate?

In Germany, now the acknowledged store-house of ideas, producing more and better brain results, possibly, than all the rest of the world, the climate is cold and exacting. The temperature is eight or ten degrees lower than in France, and equal to that of Scotland. The Vosges and Hartz Mountains, with their spurs, make Germany a country of mountain air. The climate is more continental than in Great Britain, which is possibly an advantage to brain-workers. Here Luther, Richter, Göthe, and Schiller lived and wrote; and their peers are toiling on to-day, finding the cool, bracing climate a most vigorous energizer to hard work. The productions are not so spontaneous as to beget indolence, and reaction of the human system against the cold sets the powers of the mind into vigorous action. Not alone to her climate does Germany owe her wonderful brain-products, unrivaled in time, but largely to it. These northern nations, France, Great Britain, and Germany, present mental results that are less fanciful than those of the ancients. Facts are reached by the inductive method; a purer philosophy and nobler religion are believed in; imagination is rich and varied, but not wild and sensual; patient and extended research mark the labors of the plodding brain-workers of Western Europe.

In America the influences of climate are plain to all. Of one race, the settlers of Jamestown and Plymouth began their work; but if the New Englanders had to contend with greater privations and a colder climate, they were repaid for it by largely giving thought to the nation. New England principles and ideas are not mere expressions— they are freighted with meaning. Are the incompatible characteristics of the two sections of our country traceable so much to anything else as to influences of climate? Slavery was once in Massachusetts as well as in South Carolina. The climate and productions; the sense of right, born of a vigorous conscience and healthy brain; the predominance of reason and intellect over the imagination and passions, as Guyot explains—all, no doubt, had to do with this difference. In the North, man's character and activities, under the grayer skies and severer climate, are more in his control; while the fiery Southron is impatient at the Northerner's slowness. But American literature, as such, has almost all grown up north of 55° Fah., which is near Mason and Dixon's Line. Edwards, Webster, Bancroft, Prescott, Motley, Irving, Emerson, Hawthorne, Whittier, Longfellow—names to live as long as America lives—are all Northern men, and have few compeers in the warmer, enervating Southern States.

After these reviews, the question naturally arises, What of Kansas? Will her climate probably be productive of brain creations or not? The mean temperature at Lawrence, for eight years, has been 52.82° Fah. Somewhat warmer than New England and Scotland, those centers of mental activity; the former being at Boston 47, and at Edinburgh 46° Fah. It is almost exactly the temperature of Berlin, the center of German activity, and of London, the center of English activity. The extreme heat of the summer is almost continually relieved by breezes, but for which vigorous mental and physical activity would be at times almost totally cut off. As it is, more or less enervation is felt by people from a cooler climate. It is feared by many that this is leading to habits of indolence, especially in the influence of three or four summer months. Yet to say, in face of the vast crops and general improvements, both private and public, that the people of Kansas are much given to indolence, would be folly. It may be feared, however, that keenness of mental energy is somewhat dulled by the heat. To be productive in brain-work, not only is keen energy demanded, but impassionate patience. The production of a single book has often cost long years of continuous work. Will Kansas climate invite to such patient plodding.

Possibly another cause for fear is the ease with which simply a living is gained. Not nearly as much toil, care and economy are called for here to gain a living as in New England. History shows that when a people can easily get a competency, or wallow in wealth, degeneracy of mind follows. Note the commencement of degeneracy in Egypt, Persia and Rome. No age in English literature has equalled that of Eilzabeth. Yet Englishmen had to work much harder then than now. Will lack of necessity for hard toil be a bar to mental creation in our State? Thinking of these things, I have wished that some superfluous spurs from the Rocky Mountains were set down in the middle of Kansas. When we think of the hectic literature growing up among the foot-hills of the Himalayas, the Ghauts and the Zendavesta in the eastern highlands of Persia, the Hebrew scripture in the hill-country of Palestine, of Greek and Latin classics among the mountains of Greece and the Apennines, the literature of France, Great Britain and Germany, in countries, many parts of which are broken with high hills and rugged mountains, of New England, New York and Ohio, all of them hilly and mountainous, we can sigh for the subtle something hanging above these mountains—the bracing air, the intoxication of their fresh breezes, or varied scenery, that some way has given birth, has shaped and vivified the best brain and heart productions for four thousand years. Yet there is a quiet, luxuriant beauty to our landscapes of extended prairie, wooded streams and bluffs, that may partially replace the lack of mountain scenery.

It has been suggested by Prof. F. H. Snow, that the general dryness of the atmosphere in Kansas may prove favorable to brain-workers. It is a well-known fact that one is languid, and persistent work is repugnant to him, when the air is more than usually humid. The amount of ozone is greater here than in Michigan, and possibly in other States, as shown by Prof. Kedzie's paper on Ozone, in this Academy. Quite probably, this element will prove conducive to a great mental activity. Those familiar with the history of literature, will remember that when men are settling a country there is little chance for pure mental products. With other things, their minds are absorbed in organizing, building, shaping. Thought is like carbon: to crystalize into the diamond it needs time, and most favorable of surrounding influences. Yet the very fusion of so many diverse characteristics of blood, locality and nationality, may yet place Kansas mental products in an enviable place. Give us time, and Kansas may be the Athens of America.

The attention paid to the machinery of mental development here is praiseworthy. School-houses and colleges have sprung up on every side, and newspapers have multiplied. Of the latter, in 1874, there were more than one hundred and fifty. No doubt, any one familiar with Eastern education is grieved at the lack of thoroughness in our public schools. As the students are passed up into the colleges, this lack is often painfully apparent. Why? Does the climate beget habits of mental laziness? Possibly, however, it is owing to the lack of time for the crystalization of the system. We must not be deceived by the number of schools and colleges: the work accomplished in them is the true test of mental capabilities. There is lack, too, in the number of students attending the various colleges of the State. As near as I can reach number, in eleven State and denominational colleges in 1874, there were, including preparatory and collegiate departments, only about fourteen hundred students, by far the greater number of these in the lower grades of preparatory. It is found difficult to induce students to take extended classical or scientific drill. In closing this paper, I am glad to quote the opinion on this subject of a teacher known to you all, Dr. Marvin: "I had almost reached the conclusion that in Kansas we had struck the golden mean. The students with whom I had to do in Allegheny College were better drilled in the elements of education than most who come to us here. Our students certainly show a mental vigor, as a body, equal to any with whom I have met, in an experience of twenty-nine years of seminary and college labor. The students, as I know them in Keeseville Academy, Clinton county, New York, were quite as lively at ball, especially foot-ball, but not better in algebra. This is as I seem to see them in 1839. I doubt whether we yet have age and solidity enough in society here, to determine scientifically the merits and demerits of our climate or brain ability."

Baldwin City, Kansas, November, 1876.

BISON LATIFRONS IN KANSAS.

By B. F. Mudge.

In his monograph on the American bison, Prof. J. A. Allen has given a description of two species of extinct buffalo, viz.: B. latifrons and B. antiquus. Of these, the former is the largest, the rarest, and the most remarkable. No entire or half skeleton exists, and it has been found in four only of the United States. Even single bones are rare. It therefore becomes of interest to preserve every fragment of this gigantic animal. A few months ago, a horn-core of B. latifrons was fished from the bed of the Big Blue river, a few miles from Manhattan, Kas. We give its measurements as follows, viz.:

Length on the convex side	31 inches.
Length on the chord of the arc	22 inches.
Circumference 3 inches from the base	16½ inches.
Circumference 10 inches from the base	13 inches.
Circumference 14 inches from the base	12 inches.
Circumference 24 inches from the base	8½ inches.

Comparing these measurements with those given by Prof. Allen, we find our Kansas specimen a little shorter, more slender, and more curved than his. This would indicate the Kansas horn-core to be from a female. About an inch had been broken from the tip. If we restore this, and add the horn—which was rather slender—and the breadth of skull, we shall find that the distance from tip to tip will be over nine feet. The weight of B. latifrons was about four times that of the living buffalo. One other specimen has been found in Texas. As yet, these two are the only specimens of B. latifrons that have been discovered between the Mississippi river and the Rocky mountains.

HABITS OF THE PRAIRIE DOGS.

By H. A. Brous.

Prairie dogs have been the subject of many wild speculations. Much has been given to the public as facts concerning these interesting animals